


# STR-V220

## SERVICE MANUAL

US Model



This receiver incorporates the Dolby\* Pro Logic Surround system.

\* Manufactured under license from Dolby Laboratories Licensing Corporation.  
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### POWER OUTPUT AND TOTAL HARMONIC DISTORTION

With 8 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 60 watts per channel minimum RMS power, with no more than 0.3% total harmonic distortion from 250 milliwatts to rated output.

#### Amplifier section

##### POWER OUTPUT

**Stereo mode** (8 ohms 20 Hz - 20 kHz, THD 0.3%)  
60 W + 60 W

**Surround mode** (8 ohms at 1 kHz, THD 0.08%)

Front: 60 W/ch

Center\*: 60 W

Rear\*: 60 W/ch

\* Depending on the surround mode and the source, sound will not be output.

### SPECIFICATIONS

#### Frequency response

CD, TAPE/MD, TV/SAT,  
VIDEO:  
10 Hz - 50 kHz  $\pm 1$  dB

#### Inputs

	Sensitivity	Impedance	S/N (weighting network, input level)
CD	200 mV		82 dB
TAPE/MD, TV/SAT, VIDEO	150 mV	50 kilohms	(A, 150 mV)

#### Outputs

TAPE/MD REC OUT:  
Voltage: 150 mV,  
Impedance: 10 kilohms  
VIDEO AUDIO OUT:  
Voltage: 150 mV,  
Impedance: 10 kilohms  
MIX AUDIO OUT:  
Voltage: 2 V  
Impedance: 10 kilohms

#### PHONES:

Accepts low and high impedance headphones

#### MUTING

Full mute

#### BASS BOOST

+10 dB at 70 Hz

#### TONE

$\pm 8$  dB at 100 Hz and 10 kHz

#### FM tuner section

**Tuning range** 87.5 - 108.0 MHz

#### Antenna terminals

300 ohms, balanced  
75 ohms, unbalanced

#### Sensitivity

Mono: 18.3 dBf, 4.5  $\mu$ V  
Stereo: 38.3 dBf, 45  $\mu$ V

#### Usable sensitivity

11.2 dBf, 2  $\mu$ V (IHF)

#### S/N

Mono: 76 dB  
Stereo: 70 dB

— Continued on next page —

## FM STEREO/FM-AM RECEIVER



# SONY®

**Harmonic distortion at 1 kHz**

Mono: 0.3%  
Stereo: 0.5%

**Separation** 45 dB at 1 kHz

**Frequency response**  
30 Hz - 15 kHz  $\pm 0.5$  dB

**Selectivity** 60 dB at 400 kHz

**AM tuner section**

**Tuning range** With 10 kHz interval: 530 - 1710 kHz\*\*

**Antenna** Loop antenna

**Usable sensitivity**  
50 dB/m (at 1,000 kHz)

**S/N** 54 dB (at 50 mV/m)

**Harmonic distortion**  
0.5% (50 mV/m,  
400 Hz)

**Selectivity** At 10 kHz: 40 dB

\*\* You can change the AM tuning interval to 9 kHz or to 10 kHz. After tuning in any AM station, turn off the receiver. Hold down the TUNING + button and press the I/⏻ button. All preset stations will be erased when you change the interval. To reset the interval to 10 kHz, repeat the procedure.

**General**

**Power requirements**  
120 V AC, 60 Hz

**Power consumption**  
130 W

**AC outlets** 1 switched, 120 W/1 A maximum

**Dimensions** 355 × 120 × 325 mm  
(14 × 4  $\frac{3}{4}$  × 12  $\frac{3}{4}$  inches)  
including projecting parts  
and controls

**Mass (Approx.)**  
5.7 kg (12 lb 10 oz)

**Supplied accessories**

- FM wire antenna (1)
- AM loop antenna (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)

Design and specifications are subject to change without notice.

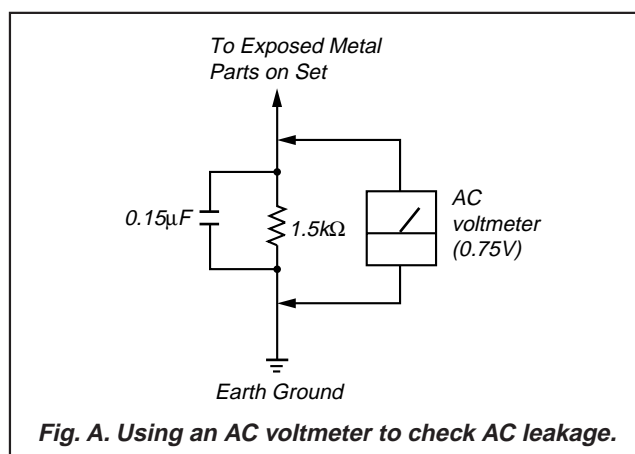
**SAFETY CHECK-OUT**

After correcting the original service problem, perform the following safety checks before releasing the set to the customer: Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

**LEAKAGE**

The AC leakage from any exposed metal part to earth Ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)



**Fig. A. Using an AC voltmeter to check AC leakage.**

**Notes on chip component replacement**

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

**SAFETY-RELATED COMPONENT WARNING !!**

**COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

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## SECTION 1 SERVICING NOTE

### FACTORY SET

Mode which sets the preset settings of the unit to that at shipment.

#### Procedure:

While pressing the **VIDEO** button and **TV/SAT** button together, press the **I/⏻** button to turn on the power.  
“FACTORY” will be displayed and factory settings executed.

### INITIALIZATION

Mode which erases all the preset settings of the unit.  
Use this mode when returning the unit to the customer.

#### Procedure:

While pressing the **VIDEO** button, **TV/SAT** button, and **TAPE/MD** button together, press the **I/⏻** button to turn on the power.  
“INITIAL” will be displayed and initialization executed.

### FLUORESCENT INDICATOR TUBE LIGHTING CHECK

Mode which lights up the whole fluorescent indicator tube or partially.

#### Procedure:

While pressing the **TV/SAT** button and **TAPE/MD** button together, press the **I/⏻** button to turn on the power.  
The fluorescent indicator tube will light up in about 0.5 seconds, and then start to light up partially. After partial lighting completes, the **BASS BOOST** indicator will light up, “FINISH” will be displayed, indicating that fluorescent indicator tube lighting check has completed.

### SWITCHING OF 9 kHz/10 kHz AM CHANNEL STEP

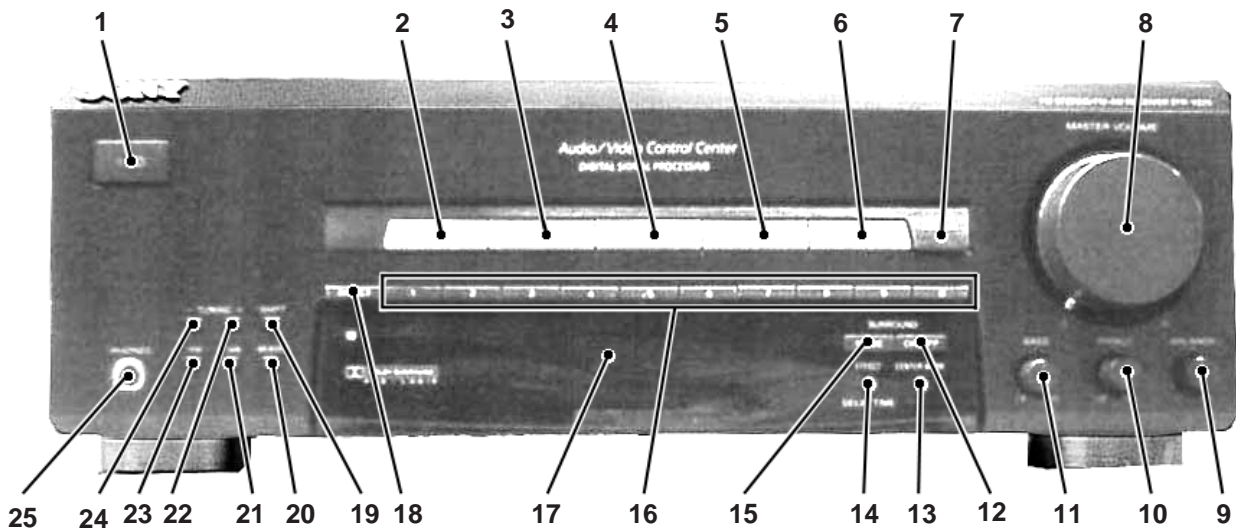
The AM channels of this unit can be switched between 9 kHz and 10 kHz.

#### Procedure:

Set FUNCTION to AM and turn off the power.  
While pressing the **TUNING +** button, press the **I/⏻** button to turn on the power.  
“9 k STEP” or “10 k STEP” will be displayed, and the channel step will be switched.

## SECTION 2 GENERAL

### Front Panel Descriptions

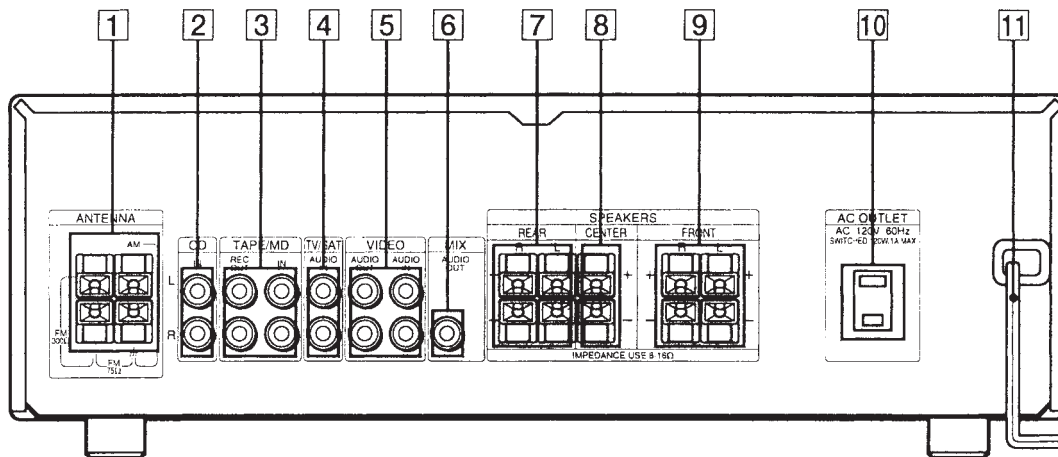


### Location of Parts and Controls

- |                        |                             |                    |
|------------------------|-----------------------------|--------------------|
| 1 I/⏻ button           | 10 TREBLE knob              | 19 SHIFT button    |
| 2 VIDEO button         | 11 BASS knob                | 20 MEMORY button   |
| 3 TV/SAT button        | 12 SURROUND ON/OFF button   | 21 AM button       |
| 4 TAPE/MD button       | 13 CENTER MODE button       | 22 TUNING + button |
| 5 CD button            | 14 EFFECT/DELAY TIME button | 23 FM button       |
| 6 TUNER button         | 15 SURROUND MODE button     | 24 TUNING – button |
| 7 BASS BOOST indicator | 16 Numeral (1 to 0) button  | 25 PHONES jack     |
| 8 MASTER VOLUME knob   | 17 Display window           |                    |
| 9 BALANCE knob         | 18 DIRECT button            |                    |

This section is extracted from instruction manual.

### Rear Panel Descriptions

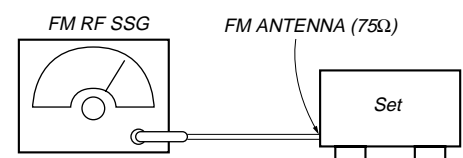


- 1 ANTENNA
- 2 CD
- 3 TAPE/MD
- 4 TV/SAT
- 5 VIDEO
- 6 MIX AUDIO OUT
- 7 REAR
- 8 CENTER
- 9 FRONT
- 10 AC OUTLET
- 11 AC power cord

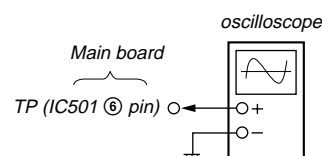
## SECTION 3 ELECTRICAL BLOCK CHECKING

### ADJUSTING THE FM/SD SIGNAL SENSITIVITY

#### Setting:



Carrier frequency: 98 MHz  
Modulation: AUDIO 1 kHz,  
75 kHz deviation (100%)  
Output level: 26 dB (at 75 Ω open) (MAX 35 dB)



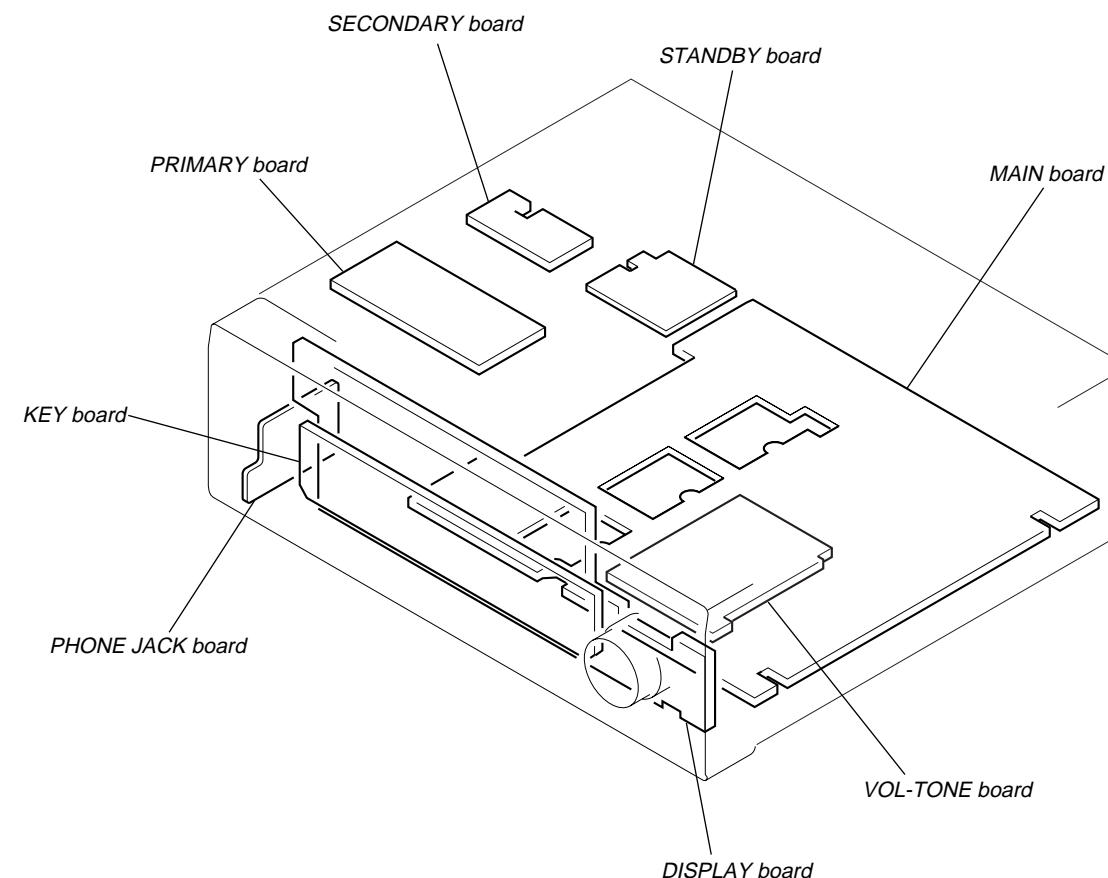
#### Procedure:

1. Set the SSG output level to 26 dB and input the signal.
2. Adjust SFR501 so that the oscilloscope level becomes 0V.
3. Raise the SSG output level slightly (max. 35 dB) when the adjustment in step 2 fails, and repeat steps 1 and 2.

**NOTE:** If the adjustment cannot be performed even when set to 35 dB, the sensitivity may be faulty, etc. Check the antenna terminal connection, FM front end and IF circuit, etc. and perform adjustments again.

## SECTION 4 DIAGRAMS

### 4-1. CIRCUIT BOARDS LOCATION



**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**  
(In addition to this, the necessary note is printed in each block.)

#### For schematic diagrams.

##### Note:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\text{pF}$
- 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
- $\Delta$  : internal component.
- $\square$  : nonflammable resistor.
- $\square$  : panel designation.

**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

- $\boxed{B+}$  : B+ Line.
- $\boxed{B-}$  : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark : FM

- Voltages are taken with a VOM (Input impedance 10 M $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- $\Rightarrow$  : FM

#### For printed wiring boards.

##### Note:

- $\square$  : parts extracted from the component side.
- $\square$  : Pattern of the conductor side.

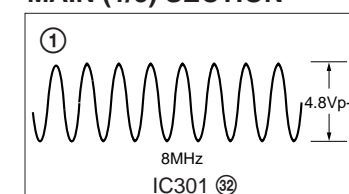
**Caution:**  
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.  
Parts face side: Parts on the parts face side seen from the parts face are indicated.

#### • Indication of transistor

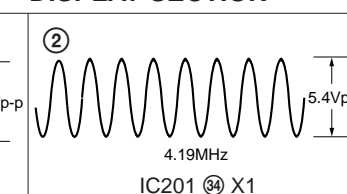


### WAVEFORMS

#### MAIN (1/3) SECTION

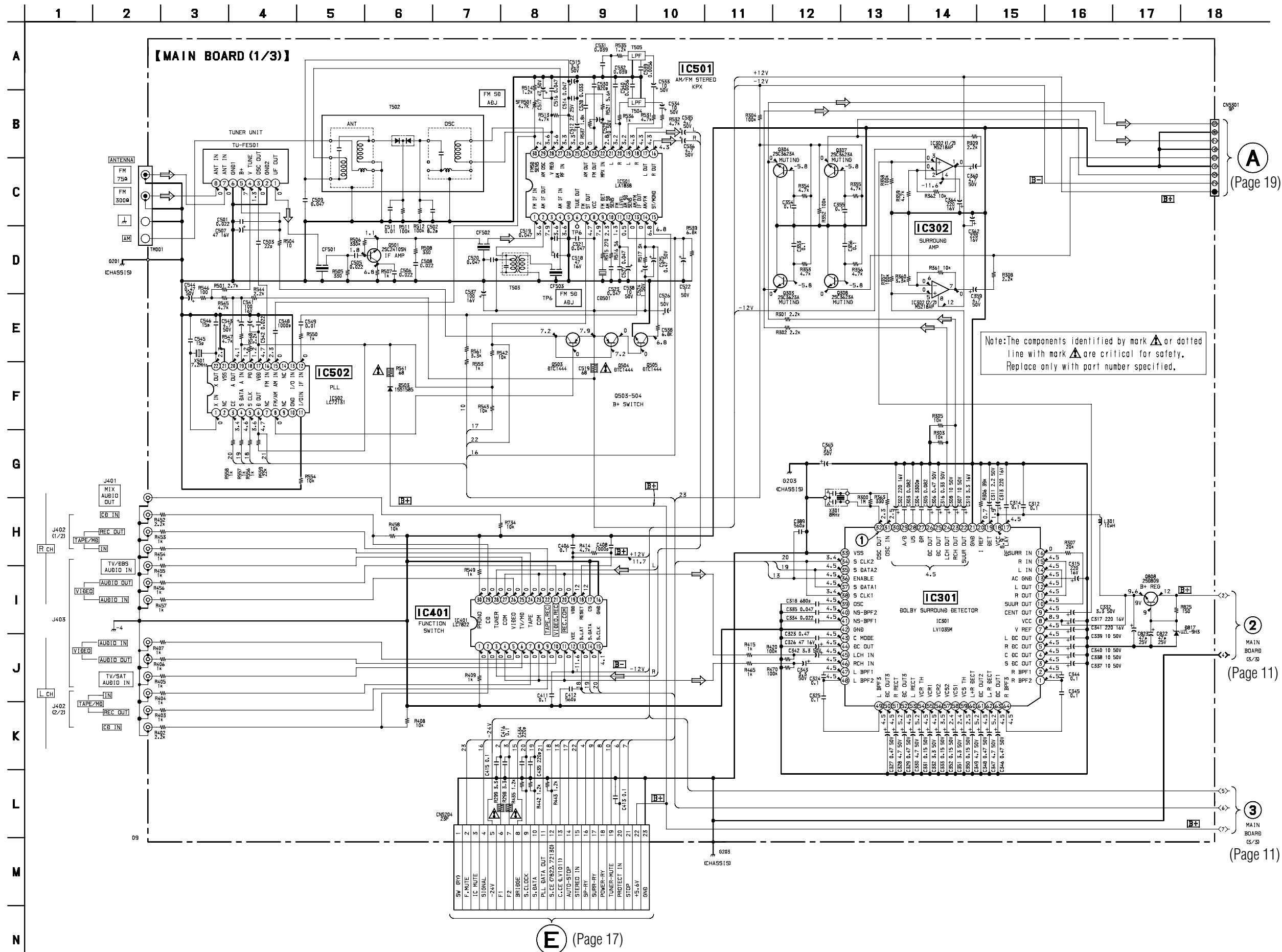


#### DISPLAY SECTION



#### 4-2. SCHEMATIC DIAGRAM – MAIN (1/3) SECTION –

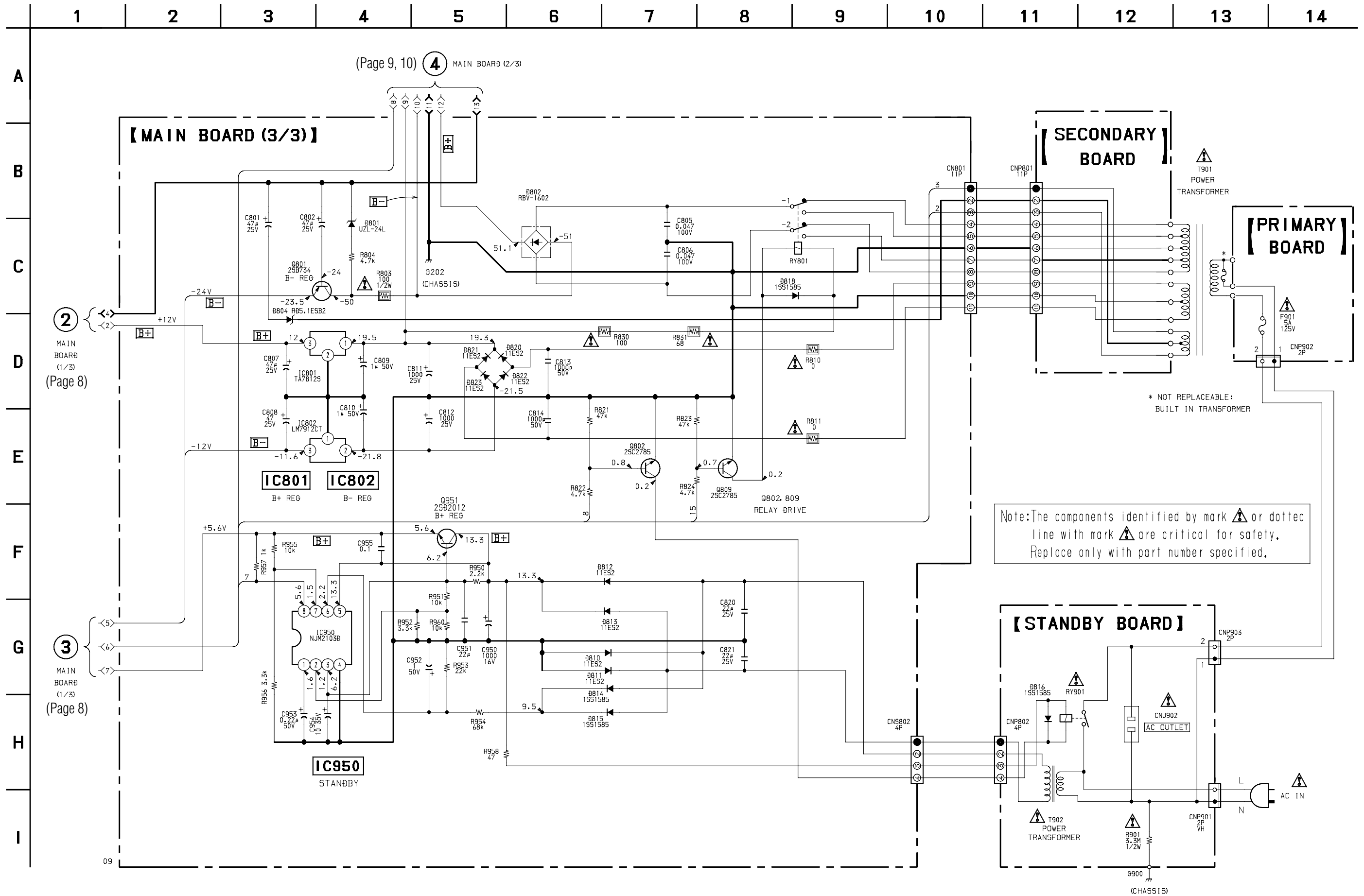
- See page 6 for Waveforms.
- See page 13 for Printed Wiring Board.
- See page 23 for IC Block Diagrams.





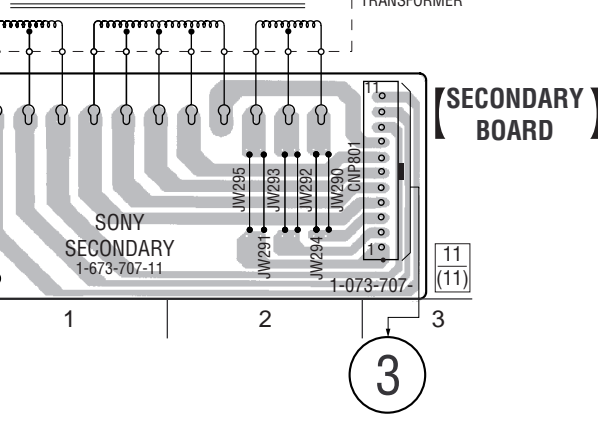


4-4. SCHEMATIC DIAGRAM – MAIN (3/3) SECTION –  
• See page 24 for IC Block Diagrams.



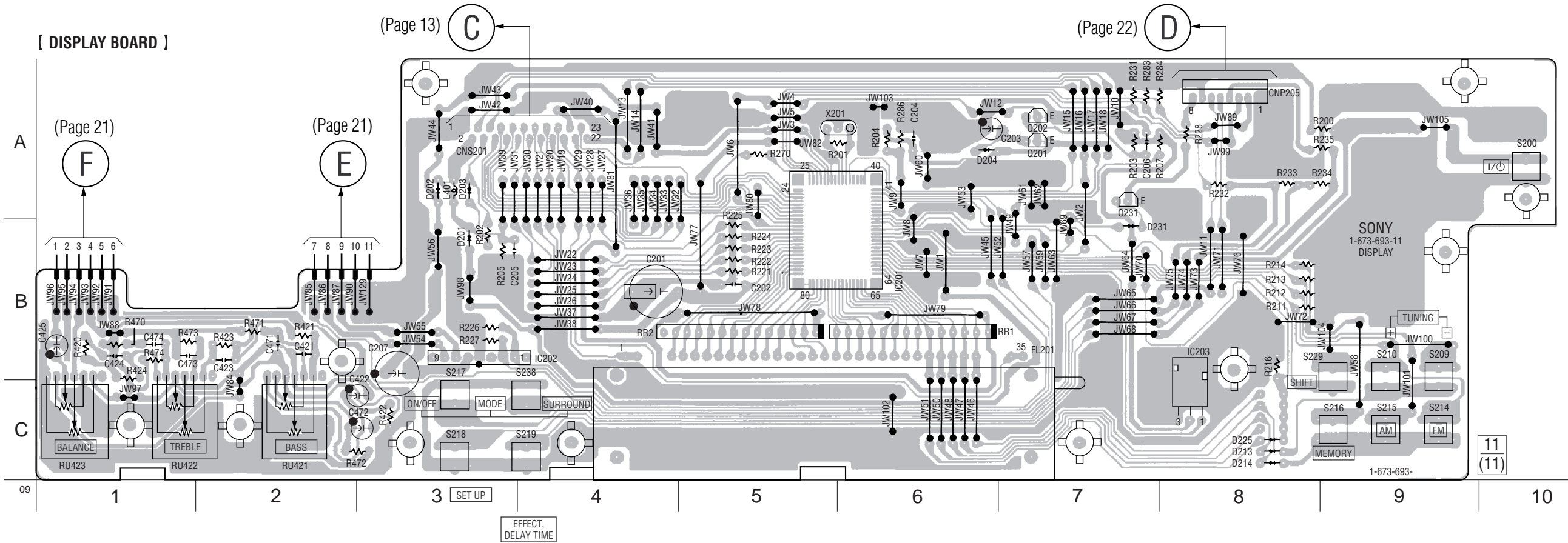


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Ref. No.	Location
D503	B-2
D610	B-5
D620	C-3
D670	D-3
D710	B-5
D720	D-3
D721	B-4
D722	B-4
D723	A-4
D724	B-4
D725	A-4
D770	C-3
D792	B-5
D793	A-5
D801	E-6
D802	D-6
D804	E-5
D810	B-6
D811	B-6
D812	B-6
D813	B-6
D814	A-6
D815	A-6
D817	E-1
D818	E-6
D820	E-6
D821	E-6
D822	E-6
D823	E-6
IC301	E-2
IC302	D-2
IC401	B-3
IC501	C-2
IC502	B-2
IC701	E-4
IC702	C-4
IC801	E-6
IC802	E-6
IC950	B-6
Q303	E-1
Q304	E-1
Q307	D-1
Q308	D-2
Q501	B-2
Q503	B-2
Q504	C-2
Q505	C-2
Q610	B-5
Q620	C-3
Q670	D-3
Q710	B-5
Q720	D-3
Q721	B-4
Q722	B-4
Q723	B-4
Q770	C-4
Q791	A-5
Q793	E-3
Q794	D-4
Q801	E-5
Q802	B-6
Q808	E-2
Q809	E-6
Q951	B-6

4-6. PRINTED WIRING BOARD – DISPLAY SECTION –  
• See page 6 for Circuit Boards Location.

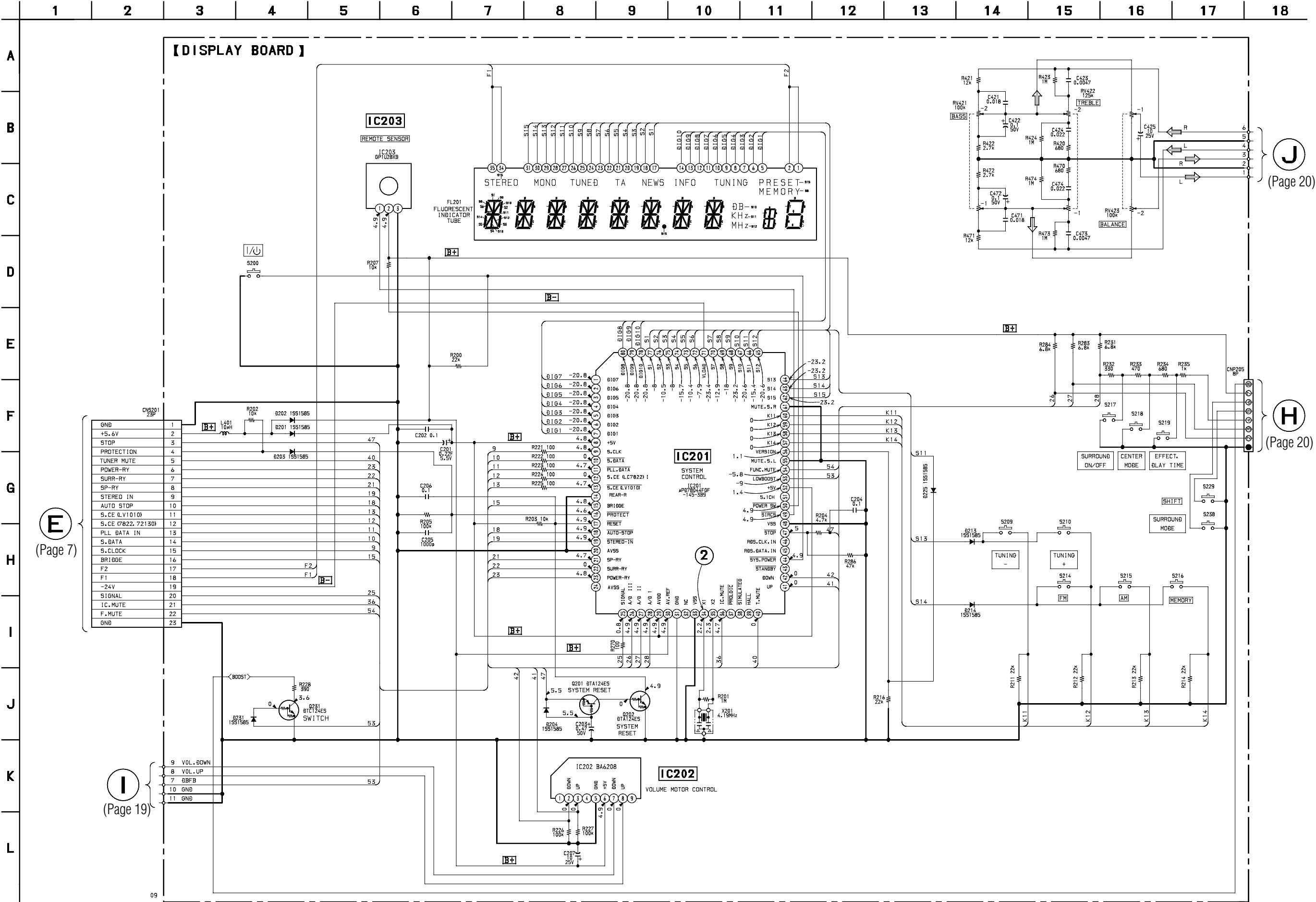


• Semiconductor Location

Ref. No.	Location
D201	B-3
D202	A-3
D203	A-3
D204	A-6
D213	C-8
D214	C-8
D225	C-8
D231	A-7
IC201	B-5
IC202	B-3
IC203	C-8
Q201	A-7
Q202	A-7
Q231	A-7

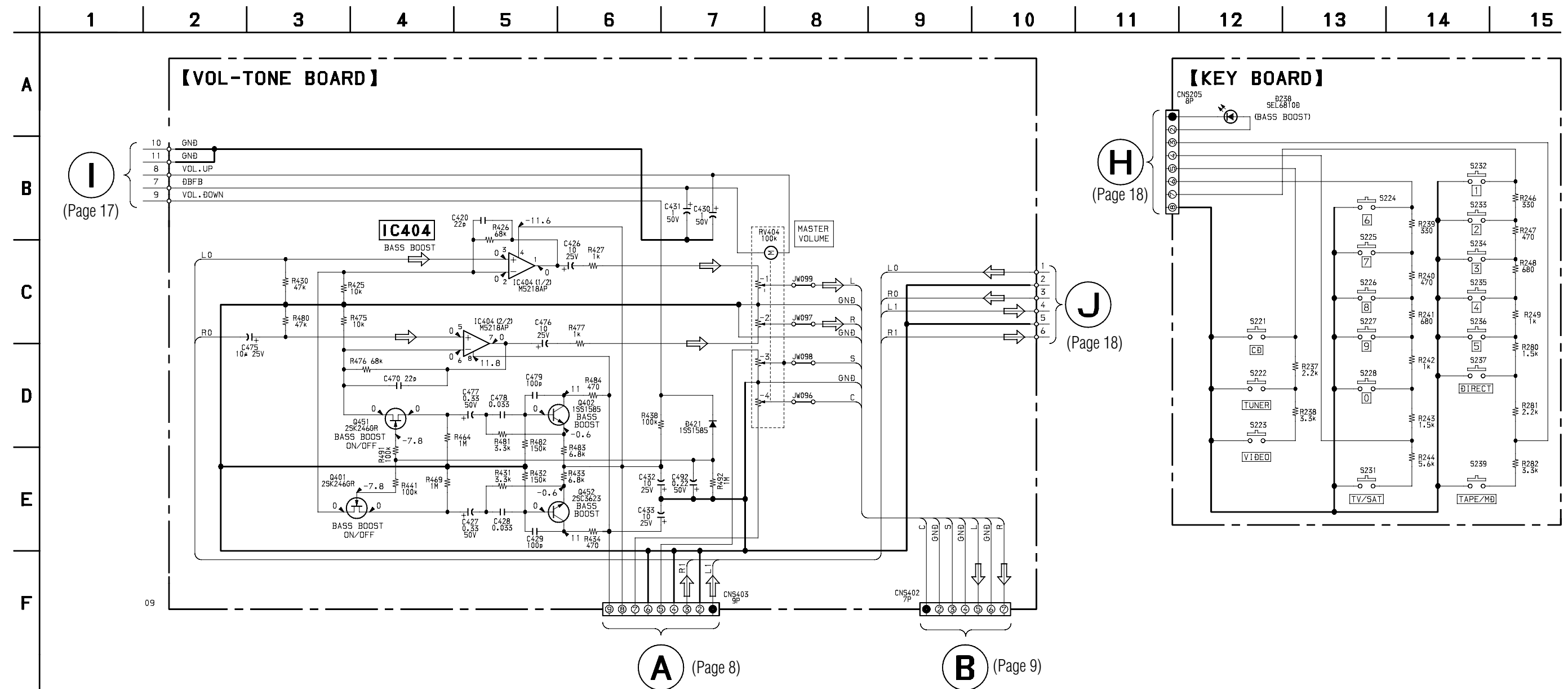
4-7. SCHEMATIC DIAGRAM – DISPLAY SECTION –

- See page 6 for Waveforms.
- See page 25 for IC Block Diagrams.
- See page 26 for IC Pin Function.



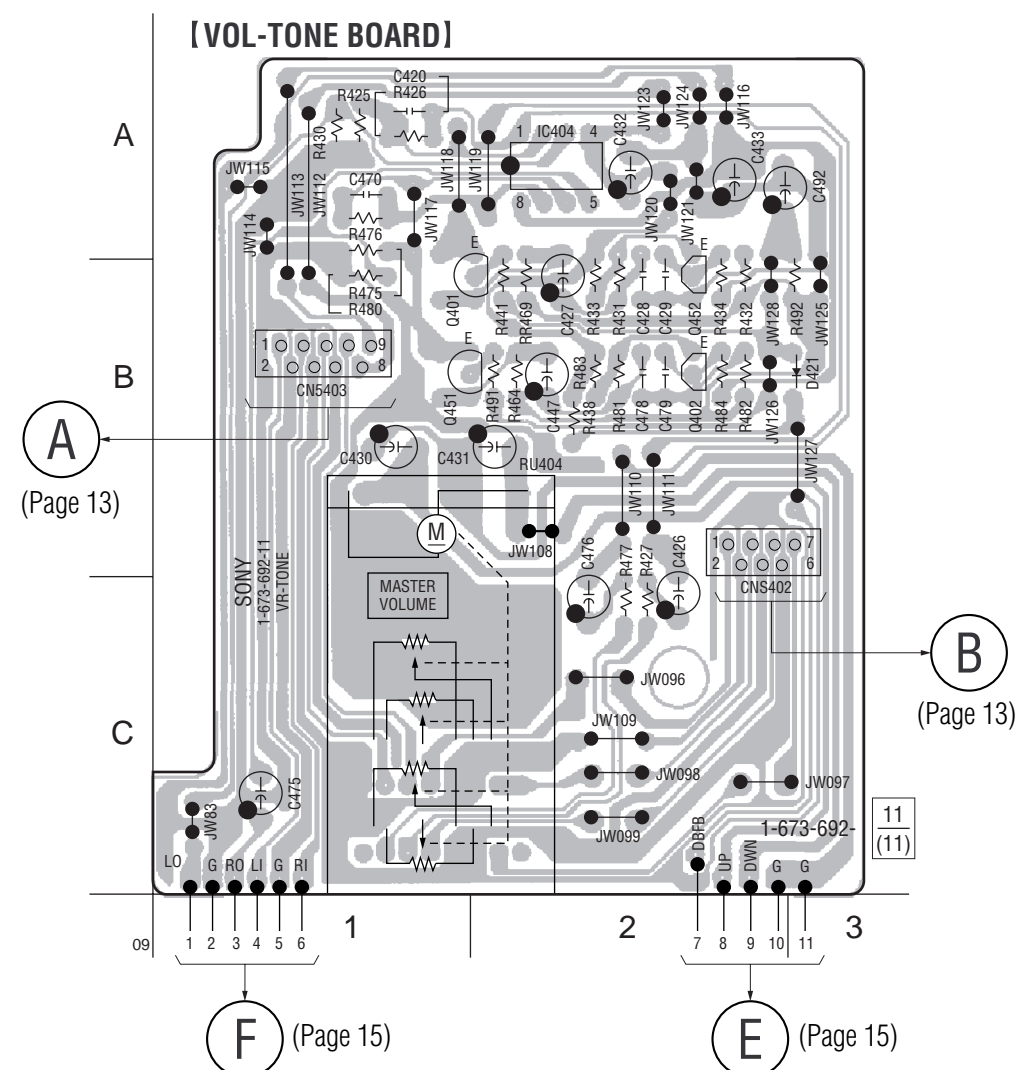
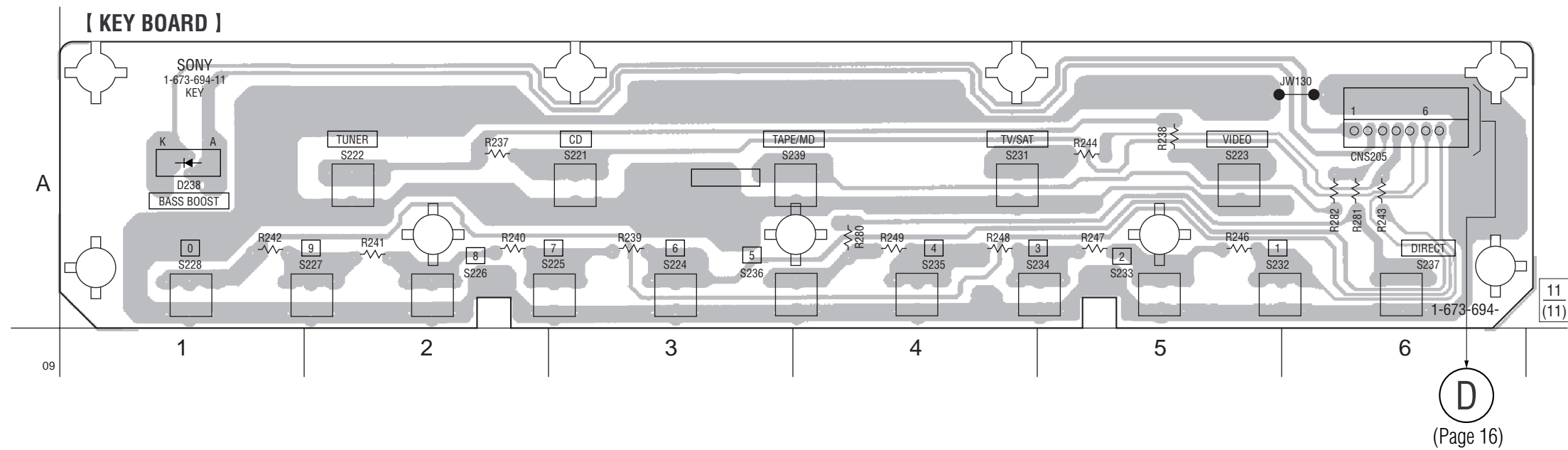


#### 4-8. SCHEMATIC DIAGRAM – PANEL SECTION –



#### 4-9. PRINTED WIRING BOARD – PANEL SECTION –

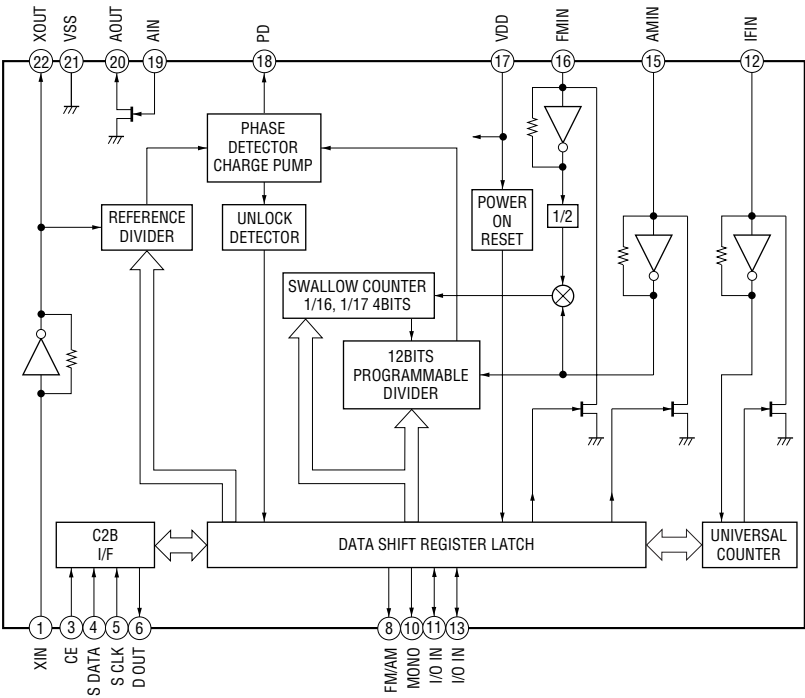
- See page 6 for Circuit Boards Location.





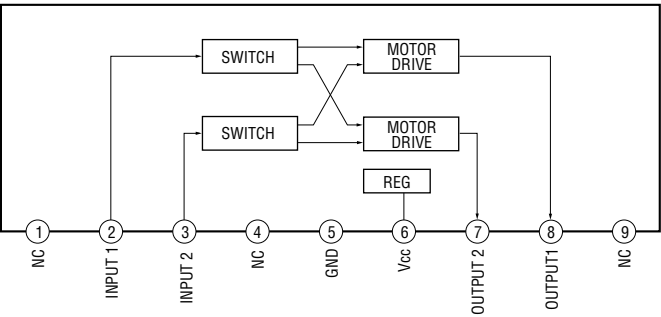


IC502 LC72131



• Display section

IC202 BA6208



#### 4-11. IC PIN FUNCTION

##### • IC201 uPD78044FGF-145-3B9 (Display board)

Pin No.	Pin Name	I/O	Function
1	DIG7	O	Fluorescent indicator tube drive
2	DIG6	O	
3	DIG5	O	
4	DIG4	O	
5	DIG3	O	
6	DIG2	O	
7	DIG1	O	
8	+5V	—	Power supply (+5V)
9	$\overline{S. CLK}$	I	System clock
10	$\overline{S. DATA}$	I	System data
11	$\overline{PLL. DATA}$	I	PLL data input from TU001
12	S. CE (LC7288)	O	Chip enable output
13	$\overline{S. CE}$ (LV1010)	O	Chip enable output
14	REAR-R	I	Input for model select (Connected to ground)
15	BRIDGE	I	Protector detect input
16	$\overline{PROTECT}$	I	Protector detect input
17	$\overline{RESET}$	I	System reset terminal
18	$\overline{AUTO-STOP}$	I	Auto stop detect input
19	$\overline{STEREO-IN}$	I	Stereo detect input
20	AVSS	—	Ground
21	SP-RY	O	Speaker relay drive
22	SURR-RY	O	Surround Relay
23	POWER-RY	O	Power relay drive
24	AVSS	—	Ground (Not used)
25	SIGNAL	I	A/D signal input terminal
26	A/D3	I	A/D3 key input terminal
27	A/D2	I	A/D2 key input terminal
28	A/D1	I	A/D1 key input terminal
29	AVDD	—	Power supply (+5V)
30	AV. REF	—	Reference voltage (+5V)
31	GND	—	Ground
32	NC	—	Not used (Open)
33	VSS	—	Ground
34	X1	I	System clock (4.19MHz)
35	X2	O	System clock (4.19MHz)
36	IC. MUTE	O	Mute drive output for $\mu$ PD2581V (IC701)
37	$\overline{PROLOGIC}$	O	Plologic LED (Not used)
38	$\overline{SIMULATED}$	O	CINEMA STUDIO LED (Not used)
39	$\overline{HALL}$	O	HALL LED (Not used)
40	T. MUTE	O	Tuner mute drive output

Pin No.	Pin Name	I/O	Function
41	VOLUME UP	O	Volume up
42	VOLUME DOWN	O	Volume down
43	STANDBY	O	Standby LED drive (Not used)
44	SYS. POWER	I	System power ON/OFF
45	RDS. DATA. IN	I	RDS data input (Not used)
46	RDS. CLK. IN	I	RDS clock input (Not used)
47	STOP	I	Stop signal input from NJM2103D (IC950)
48	VSS	—	Ground
49	SIRCS	I	Sircs signal input
50	POWER SW	I	Power switch input terminal
51	5.1ch LED	—	5.1ch LED drive (Not used)
52	+5V	—	Power supply (+5V)
53	BASS BOOST	I	Bass boost LED drive
54	FUNC. MUTE	O	Line mute drive
55	SL MUTE	O	SL mute drive
56	VERSION	I	Input for model select
57	K14	I	Key in 4
58	K13	I	Key in 3
59	K12	I	Key in 2
60	K11	I	Key in 1
61	SR MUTE	O	SR mute drive
62	S15	O	Not used
63	S14	O	Fluorescent indicator tube drive
64	S13	O	
65	S12	O	
66	S11	O	
67	S10	O	
68	S9	O	
69	S8	O	
70	S7	O	
71	VLOAD	—	Connect to –24V
72	S6	O	Fluorescent indicator tube drive
73	S5	O	
74	S4	O	
75	S3	O	
76	S2	O	
77	S1	O	
78	DIG10	O	Fluorescent indicator tube drive
79	DIG9	O	
80	DIG8	O	

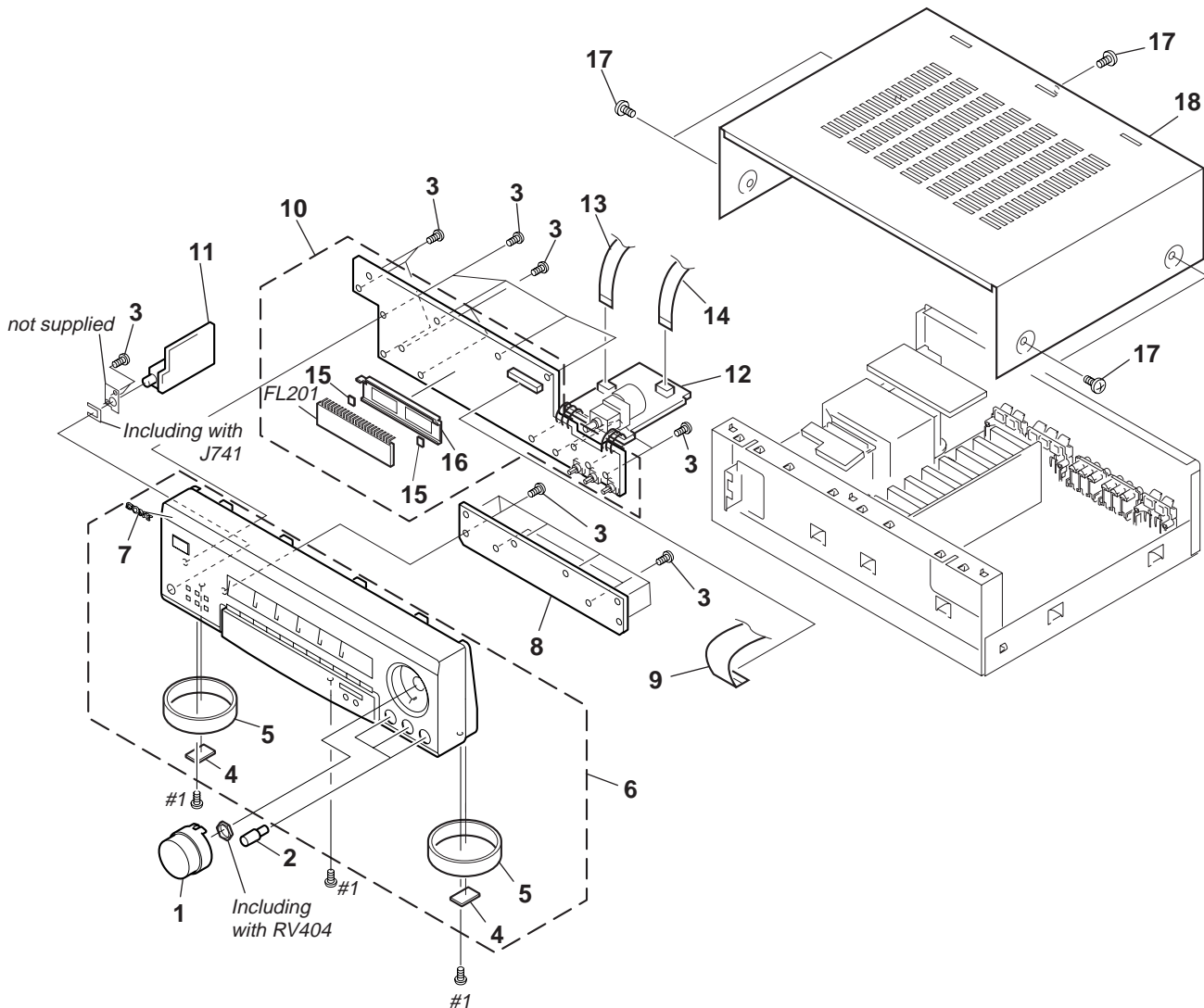
## SECTION 5 EXPLODED VIEWS

### NOTE:

- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

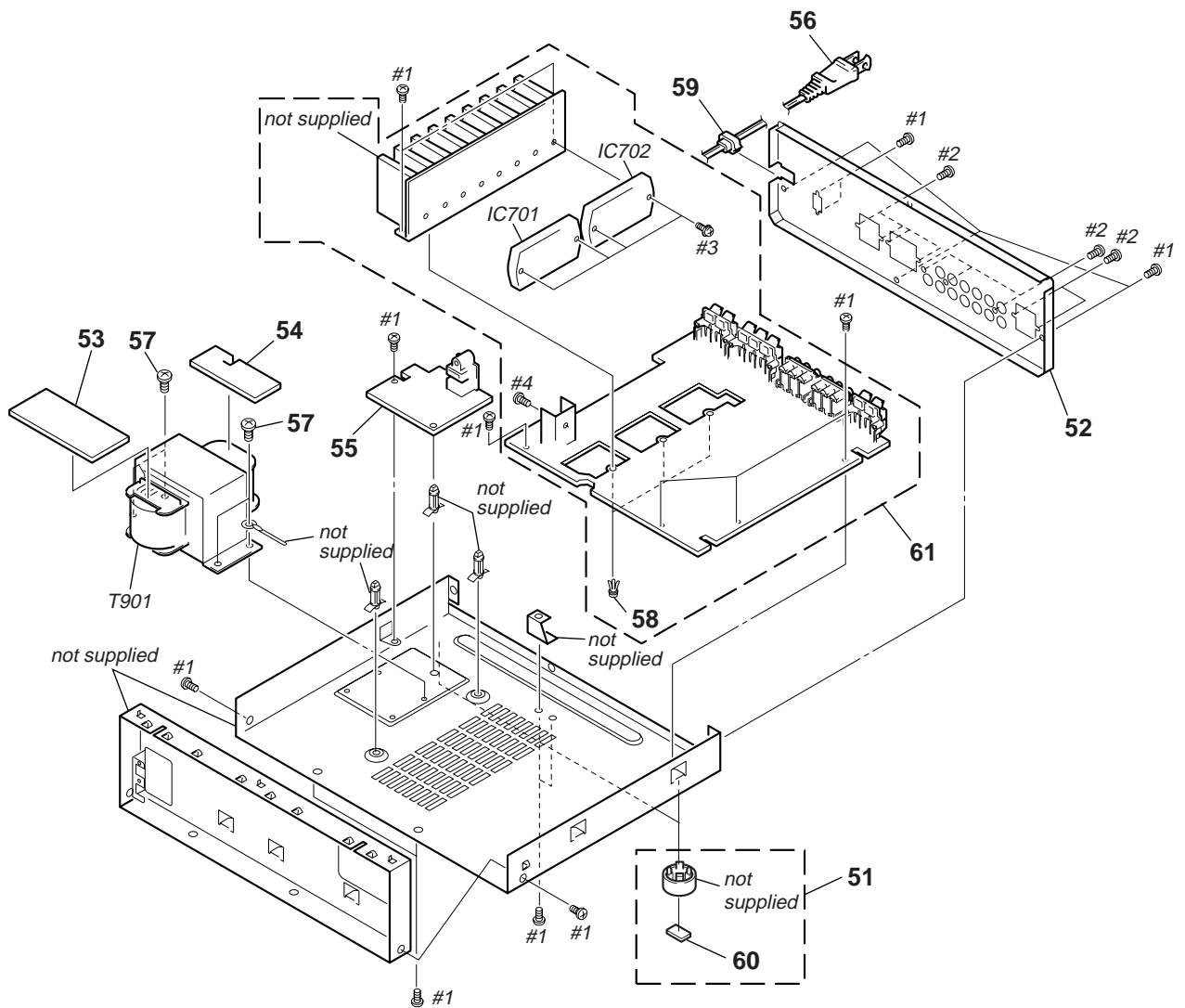
The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

### 5-1. CASE SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	A-4411-215-A	KNOB ASSY		11	1-673-706-11	PHONE JACK BOARD	
2	4-210-373-01	KNOB (EQ)		12	A-4419-635-A	VOL-TONE BOARD, COMPLETE	
3	4-951-620-01	SCREW (2.6X8), +BVTP		13	1-782-074-11	WIRE (FLAT TYPE) (7 CORE)	
* 4	4-978-398-21	CUSHION		14	1-782-075-11	WIRE (FLAT TYPE) (9 CORE)	
5	4-977-593-01	RING (DIA. 50), ORNAMENTAL		* 15	4-921-941-01	CUSHION (FL)	
6	A-4411-579-A	PANEL ASSY, FRONT		* 16	4-210-383-01	HOLDER (FL TUBE)	
7	4-996-698-41	EMBLEM, SONY		17	3-704-366-31	SCREW (CASE) (M3X6)	
8	A-4419-637-A	KEY BOARD, COMPLETE		* 18	4-210-365-01	CASE	
9	1-782-100-11	WIRE (FLAT TYPE) (23 CORE)		FL201	1-517-141-11	INDICATOR TUBE, FLUORESCENT	
10	A-4419-636-A	DISPLAY BOARD, COMPLETE					

5-2. SHASSIS SECTION



The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-4947-412-1	FOOT (SMALL) ASSY		57	4-900-386-01	SCREW	
52	4-210-367-11	PANEL, BACK		58	4-210-380-01	RIVET, NYLON	
53	1-673-708-11	PRIMARY BOARD		* 59	3-703-244-00	BUSHING (2104), CORD	
54	1-673-707-11	SECONDARY BOARD		* 60	4-978-398-21	CUSHION	
55	1-673-705-11	STANDBY BOARD					
$\triangle$ 56	1-783-531-21	CORD, POWER		61	A-4419-639-A	MAIN BOARD, COMPLETE	
				$\triangle$ T901	1-431-258-31	TRANSFORMER, POWER	

# DISPLAY

## SECTION 6 ELECTRICAL PARTS LIST

### Note:

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS  
All resistors are in ohms  
METAL: Metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F : nonflammable

- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$  A..., uPA...:  $\mu$  PA..., uPB...:  $\mu$  PB...,  
uPC...:  $\mu$  PC..., uPD...:  $\mu$  PD...
- CAPACITORS  
uF :  $\mu$  F
- COILS  
uH :  $\mu$  H

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-4419-636-A	DISPLAY BOARD, COMPLETE *****				< COIL >	
*	4-210-383-01	HOLDER (FL TUBE)		L401	1-410-509-11	INDUCTOR 10uH	
*	4-921-941-01	CUSHION (FL)				< TRANSISTOR >	
		< CAPACITOR >		Q201	8-729-900-63	TRANSISTOR DTA124ES	
C201	1-104-905-11	CAPACITOR 0.22F	5.5V	Q202	8-729-900-36	TRANSISTOR DTC124ES	
C202	1-164-159-21	CERAMIC 0.1uF	50V	Q231	8-729-900-36	TRANSISTOR DTC124ES	
C203	1-124-465-00	ELECT 0.47uF	20% 50V			< RESISTOR >	
C204	1-164-159-21	CERAMIC 0.1uF	50V	R200	1-247-863-91	CARBON 22K	5% 1/4W
C205	1-162-294-31	CERAMIC 0.001uF	10% 50V	R201	1-247-903-00	CARBON 1M	5% 1/4W
C206	1-164-159-21	CERAMIC 0.1uF	50V	R202	1-249-429-11	CARBON 10K	5% 1/4W
C207	1-126-096-11	ELECT 10uF	20% 35V	R203	1-249-429-11	CARBON 10K	5% 1/4W
C421	1-137-440-11	FILM 0.018uF	5% 50V	R204	1-249-425-11	CARBON 4.7K	5% 1/4W F
C422	1-124-463-00	ELECT 0.1uF	20% 50V	R205	1-249-441-11	CARBON 100K	5% 1/4W
C423	1-137-368-11	FILM 0.0047uF	5% 50V	R207	1-249-429-11	CARBON 10K	5% 1/4W
C424	1-137-372-11	FILM 0.022uF	5% 50V	R211	1-247-863-91	CARBON 22K	5% 1/4W
C425	1-126-795-11	ELECT 10uF	20% 25V	R212	1-247-863-91	CARBON 22K	5% 1/4W
C471	1-137-440-11	FILM 0.018uF	5% 50V	R213	1-247-863-91	CARBON 22K	5% 1/4W
C472	1-124-463-00	ELECT 0.1uF	20% 50V	R214	1-247-863-91	CARBON 22K	5% 1/4W
C473	1-137-368-11	FILM 0.0047uF	5% 50V	R216	1-247-863-91	CARBON 22K	5% 1/4W
C474	1-137-372-11	FILM 0.022uF	5% 50V	R221	1-247-807-31	CARBON 100	5% 1/4W
		< CONNECTOR >		R222	1-247-807-31	CARBON 100	5% 1/4W
* CNP205	1-580-160-11	PIN, CONNECTOR (PC BOARD) 8P		R223	1-247-807-31	CARBON 100	5% 1/4W
CNS201	1-695-346-21	PIN, CONNECTOR (PC BOARD) 23P		R224	1-247-807-31	CARBON 100	5% 1/4W
		< DIODE >		R225	1-247-807-31	CARBON 100	5% 1/4W
D201	8-719-815-85	DIODE 1S1585		R226	1-249-441-11	CARBON 100K	5% 1/4W
D202	8-719-815-85	DIODE 1S1585		R227	1-249-441-11	CARBON 100K	5% 1/4W
D203	8-719-815-85	DIODE 1S1585		R228	1-249-412-11	CARBON 390	5% 1/4W F
D204	8-719-815-85	DIODE 1S1585		R231	1-249-427-11	CARBON 6.8K	5% 1/4W F
D213	8-719-815-85	DIODE 1S1585		R232	1-249-411-11	CARBON 330	5% 1/4W
D214	8-719-815-85	DIODE 1S1585		R233	1-249-413-11	CARBON 470	5% 1/4W F
D225	8-719-815-85	DIODE 1S1585		R234	1-249-415-11	CARBON 680	5% 1/4W F
D231	8-719-815-85	DIODE 1S1585		R235	1-247-840-00	CARBON 2.4K	5% 1/4W
		< FLUORESCENT INDICATOR >		R270	1-247-807-31	CARBON 100	5% 1/4W
FL201	1-517-141-11	INDICATOR TUBE, FLUORESCENT		R283	1-249-427-11	CARBON 6.8K	5% 1/4W F
		< IC >		R284	1-249-427-11	CARBON 6.8K	5% 1/4W F
IC201	8-759-587-56	IC uPD78044FGF-145-3B9		R286	1-249-437-11	CARBON 47K	5% 1/4W
IC202	8-759-962-08	IC BA6208		R420	1-249-415-11	CARBON 680	5% 1/4W F
IC203	8-749-011-05	IC GP1U28X		R421	1-249-430-11	CARBON 12K	5% 1/4W
				R422	1-249-422-11	CARBON 2.7K	5% 1/4W F
				R423	1-247-903-00	CARBON 1M	5% 1/4W
				R424	1-247-903-00	CARBON 1M	5% 1/4W
				R470	1-249-415-11	CARBON 680	5% 1/4W F
				R471	1-249-430-11	CARBON 12K	5% 1/4W
				R472	1-249-422-11	CARBON 2.7K	5% 1/4W F



# DISPLAY

# PHONE JACK

# KEY

# MAIN

Ref. No.	Part No.	Description	Remark		
R473	1-247-903-00	CARBON	1M	5%	1/4W
R474	1-247-903-00	CARBON	1M	5%	1/4W
< VARIABLE RESISTOR >					
RV421	1-225-658-11	RES, VAR 100K/100K (BASS)			
RV422	1-225-659-11	RES, VAR 125K/125K (TREBLE)			
RV423	1-225-660-11	RES, VAR 100K/125K (BALANCE)			
< SWITCH >					
S200	1-554-937-11	SWITCH, KEY BOARD (I/⏻)			
S209	1-554-937-11	SWITCH, KEY BOARD (TUNING -)			
S210	1-554-937-11	SWITCH, KEY BOARD (TUNING +)			
S214	1-554-937-11	SWITCH, KEY BOARD (FM)			
S215	1-554-937-11	SWITCH, KEY BOARD (AM)			
S216	1-554-937-11	SWITCH, KEY BOARD (MEMORY)			
S217	1-554-937-11	SWITCH, KEY BOARD (SURROUND ON/OFF)			
S218	1-554-937-11	SWITCH, KEY BOARD (SET UP)			
S219	1-554-937-11	SWITCH, KEY BOARD (EFFECT DELAY TIME)			
S229	1-554-937-11	SWITCH, KEY BOARD (SHIFT)			
S238	1-554-937-11	SWITCH, KEY BOARD (SURROUND MODE)			
< VIBRATOR >					
X201	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)			
*****					
	1-673-706-11	PHONE JACK BOARD			
*****					
< CAPACITOR >					
C792	1-127-876-21	CERAMIC	0.01uF	10%	50V
< DIODE >					
D791	8-719-815-85	DIODE 1S1585			
< JACK >					
J741	1-785-959-11	JACK (LARGE TYPE)(PHONE JACK)			
< RESISTOR >					
R793	1-249-411-11	CARBON	330	5%	1/4W
*****					
	A-4419-637-A	KEY BOARD, COMPLETE			
*****					
< CONNECTOR >					
* CNS205	1-580-169-11	PIN, CONNECTOR (PC BOARD) 8P			
< DIODE >					
D238	8-719-070-78	DIODE SEL6810A-TP6			
< RESISTOR >					
R237	1-249-421-11	CARBON	2.2K	5%	1/4W F
R238	1-247-843-11	CARBON	3.3K	5%	1/4W
R239	1-249-411-11	CARBON	330	5%	1/4W

Ref. No.	Part No.	Description	Remark		
R240	1-249-413-11	CARBON	470	5%	1/4W F
R241	1-249-415-11	CARBON	680	5%	1/4W F
R242	1-249-417-11	CARBON	1K	5%	1/4W F
R243	1-249-419-11	CARBON	1.5K	5%	1/4W F
R244	1-249-426-11	CARBON	5.6K	5%	1/4W
R246	1-249-411-11	CARBON	330	5%	1/4W
R247	1-249-413-11	CARBON	470	5%	1/4W F
R248	1-249-415-11	CARBON	680	5%	1/4W F
R249	1-249-417-11	CARBON	1K	5%	1/4W F
R280	1-249-419-11	CARBON	1.5K	5%	1/4W F
R281	1-249-421-11	CARBON	2.2K	5%	1/4W F
R282	1-247-843-11	CARBON	3.3K	5%	1/4W
< SWITCH >					
S221	1-554-937-11	SWITCH, KEY BOARD (CD)			
S222	1-554-937-11	SWITCH, KEY BOARD (TUNER)			
S223	1-554-937-11	SWITCH, KEY BOARD (VIDEO)			
S224	1-554-937-11	SWITCH, KEY BOARD (6)			
S225	1-554-937-11	SWITCH, KEY BOARD (7)			
S226	1-554-937-11	SWITCH, KEY BOARD (8)			
S227	1-554-937-11	SWITCH, KEY BOARD (9)			
S228	1-554-937-11	SWITCH, KEY BOARD (0)			
S231	1-554-937-11	SWITCH, KEY BOARD (TV/SAT)			
S232	1-554-937-11	SWITCH, KEY BOARD (1)			
S233	1-554-937-11	SWITCH, KEY BOARD (2)			
S234	1-554-937-11	SWITCH, KEY BOARD (3)			
S235	1-554-937-11	SWITCH, KEY BOARD (4)			
S236	1-554-937-11	SWITCH, KEY BOARD (5)			
S237	1-554-937-11	SWITCH, KEY BOARD (DIRECT)			
S239	1-554-937-11	SWITCH, KEY BOARD (TAPE/MD)			
*****					
	A-4419-639-A	MAIN BOARD, COMPLETE			
*****					
	1-533-217-31	HOLDER, FUSE			
	4-210-380-01	RIVET, NYLON			
	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3			
	7-685-650-91	SCREW +BVTP 3X16 TYPE2 TT(B)			
	7-685-872-09	SCREW +BVTT 3X8 (S)			
< CAPACITOR >					
C302	1-126-934-11	ELECT	220uF	20%	16V
C303	1-130-494-11	MYLAR	0.082uF	5%	50V
C304	1-137-367-11	FILM	0.0033uF	5%	50V
C305	1-130-494-11	MYLAR	0.082uF	5%	50V
C306	1-126-959-11	ELECT	0.47uF	20%	50V
C307	1-126-964-11	ELECT	10uF	20%	50V
C308	1-126-964-11	ELECT	10uF	20%	50V
C309	1-162-291-31	CERAMIC	560PF	10%	50V
C310	1-126-962-11	ELECT	3.3uF	20%	50V
C311	1-126-961-11	ELECT	2.2uF	20%	50V
C312	1-164-159-21	CERAMIC	0.1uF		50V
C313	1-126-934-11	ELECT	220uF	20%	16V
C314	1-164-159-21	CERAMIC	0.1uF		50V
C315	1-126-934-11	ELECT	220uF	20%	16V
C316	1-124-252-00	ELECT	0.33uF	20%	50V

# MAIN

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C317	1-126-934-11	ELECT	220uF	20%	16V	C509	1-110-671-31	CERAMIC	47000PF		50V
C318	1-136-357-11	FILM	680PF	5%	50V	C511	1-164-096-11	CERAMIC	0.01uF	10%	50V
C322	1-126-962-11	ELECT	3.3uF	20%	50V	C512	1-128-551-11	ELECT	22uF	20%	25V
C323	1-136-173-00	FILM	0.47uF	5%	50V						
C324	1-136-165-00	FILM	0.1uF	5%	50V	C514	1-110-671-31	CERAMIC	47000PF		50V
						C515	1-126-962-11	ELECT	3.3uF	20%	50V
C325	1-136-165-00	FILM	0.1uF	5%	50V	C516	1-110-671-31	CERAMIC	47000PF		50V
C326	1-104-664-11	ELECT	47uF	20%	16V	C517	1-126-963-11	ELECT	4.7uF	20%	50V
C327	1-126-959-11	ELECT	0.47uF	20%	50V	C518	1-104-664-11	ELECT	47uF	20%	16V
C328	1-126-963-11	ELECT	4.7uF	20%	50V						
C329	1-126-959-11	ELECT	0.47uF	20%	50V	C519	1-110-671-31	CERAMIC	47000PF		50V
						C520	1-110-671-31	CERAMIC	47000PF		50V
C330	1-126-963-11	ELECT	4.7uF	20%	50V	C521	1-110-671-31	CERAMIC	47000PF		50V
C331	1-124-250-11	ELECT	0.15uF	20%	50V	C522	1-126-960-11	ELECT	1uF	20%	50V
C332	1-126-962-11	ELECT	3.3uF	20%	50V	C523	1-110-671-31	CERAMIC	47000PF		50V
C333	1-124-250-11	ELECT	0.15uF	20%	50V						
C334	1-137-372-11	FILM	0.022uF	5%	50V	C524	1-126-960-11	ELECT	1uF	20%	50V
						C525	1-126-959-11	ELECT	0.47uF	20%	50V
C335	1-136-161-00	FILM	0.047uF	5%	50V	C526	1-126-960-11	ELECT	1uF	20%	50V
C337	1-126-964-11	ELECT	10uF	20%	50V	C527	1-110-671-31	CERAMIC	47000PF		50V
C338	1-126-964-11	ELECT	10uF	20%	50V	C528	1-127-882-21	CERAMIC	0.033uF	10%	50V
C339	1-126-964-11	ELECT	10uF	20%	50V						
C340	1-126-964-11	ELECT	10uF	20%	50V	C529	1-126-964-11	ELECT	10uF	20%	50V
						C530	1-162-293-11	CERAMIC	820PF	10%	50V
C341	1-126-934-11	ELECT	220uF	20%	16V	C531	1-136-158-00	FILM	0.027uF	5%	50V
C342	1-126-962-11	ELECT	3.3uF	20%	50V	C532	1-136-160-00	FILM	0.027uF	5%	50V
C343	1-126-962-11	ELECT	3.3uF	20%	50V	C533	1-126-964-11	ELECT	10uF	20%	50V
C344	1-136-165-00	FILM	0.1uF	5%	50V						
C345	1-136-165-00	FILM	0.1uF	5%	50V	C534	1-126-964-11	ELECT	10uF	20%	50V
						C535	1-126-963-11	ELECT	4.7uF	20%	50V
C346	1-126-959-11	ELECT	0.47uF	20%	50V	C536	1-126-963-11	ELECT	4.7uF	20%	50V
C347	1-126-963-11	ELECT	4.7uF	20%	50V	C537	1-126-933-11	ELECT	100uF	20%	16V
C348	1-126-959-11	ELECT	0.47uF	20%	50V	C538	1-126-964-11	ELECT	10uF	20%	50V
C349	1-126-963-11	ELECT	4.7uF	20%	50V						
C350	1-124-250-11	ELECT	0.15uF	20%	50V	C539	1-161-048-00	CERAMIC	0.0056uF	10%	25V
						C540	1-161-048-00	CERAMIC	0.0056uF	10%	25V
C351	1-126-962-11	ELECT	3.3uF	20%	50V	C541	1-126-933-11	ELECT	100uF	20%	16V
C352	1-124-250-11	ELECT	0.15uF	20%	50V	C542	1-164-097-11	CERAMIC	0.022uF		50V
C353	1-164-159-21	CERAMIC	0.1uF		50V	C543	1-126-963-11	ELECT	4.7uF	20%	50V
C354	1-164-159-21	CERAMIC	0.1uF		50V						
C355	1-164-159-21	CERAMIC	0.1uF		50V	C544	1-126-959-11	ELECT	0.47uF	20%	50V
						C545	1-162-203-31	CERAMIC	15PF	5%	50V
C356	1-164-159-21	CERAMIC	0.1uF		50V	C546	1-162-203-31	CERAMIC	15PF	5%	50V
C359	1-126-963-11	ELECT	4.7uF	20%	50V	C548	1-101-001-00	CERAMIC	0.001uF		50V
C360	1-126-963-11	ELECT	4.7uF	20%	50V	C549	1-127-876-21	CERAMIC	0.01uF	10%	50V
C362	1-126-934-11	ELECT	220uF	20%	16V						
C364	1-126-934-11	ELECT	220uF	20%	16V	C601	1-126-961-11	ELECT	2.2uF	20%	50V
						C602	1-162-282-31	CERAMIC	100PF	10%	50V
C365	1-126-962-11	ELECT	3.3uF	20%	50V	C603	1-126-933-11	ELECT	100uF	20%	16V
C406	1-164-159-21	CERAMIC	0.1uF		50V	C604	1-162-201-31	CERAMIC	12PF	5%	50V
C408	1-162-294-31	CERAMIC	0.001uF	10%	50V	C606	1-104-664-11	ELECT	47uF	20%	35V
C411	1-164-159-21	CERAMIC	0.1uF		50V						
C412	1-162-291-31	CERAMIC	560PF	10%	50V	C611	1-137-372-11	FILM	0.022uF	5%	50V
						C612	1-128-576-11	ELECT	100uF	20%	63V
C413	1-164-159-21	CERAMIC	0.1uF		50V	C620	1-127-881-21	CERAMIC	0.027uF	10%	50V
C415	1-164-159-21	CERAMIC	0.1uF		50V	C651	1-126-961-11	ELECT	2.2uF	20%	50V
C416	1-164-159-21	CERAMIC	0.1uF		50V	C652	1-162-282-31	CERAMIC	100PF	10%	50V
C434	1-162-286-21	CERAMIC	220PF	10%	50V						
C435	1-162-286-21	CERAMIC	220PF	10%	50V	C653	1-126-933-11	ELECT	100uF	20%	16V
						C654	1-162-201-31	CERAMIC	12PF	5%	50V
C501	1-161-494-00	CERAMIC	0.022uF		25V	C656	1-104-664-11	ELECT	47uF	20%	35V
C502	1-161-494-00	CERAMIC	0.022uF		25V	C661	1-137-372-11	FILM	0.022uF	5%	50V
C503	1-162-207-31	CERAMIC	22PF	5%	50V	C670	1-127-881-21	CERAMIC	0.027uF	10%	50V
C505	1-164-097-11	CERAMIC	0.022uF		50V						
C506	1-164-097-11	CERAMIC	0.022uF		50V	C702	1-162-282-31	CERAMIC	100PF	10%	50V
						C703	1-126-933-11	ELECT	100uF	20%	16V
C507	1-104-660-11	ELECT	47uF	20%	16V	C704	1-162-201-31	CERAMIC	12PF	5%	50V
C508	1-164-097-11	CERAMIC	0.022uF		50V	C706	1-104-664-11	ELECT	47uF	20%	35V

Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description	Remark
C707	1-128-576-11	ELECT	100uF	20%	63V			< DIODE >		
C708	1-164-159-21	CERAMIC	0.1uF		50V		D503	8-719-815-85	DIODE	1S1585
C711	1-137-372-11	FILM	0.022uF	5%	50V		D610	8-719-815-85	DIODE	1S1585
C712	1-128-576-11	ELECT	100uF	20%	63V		D620	8-719-815-85	DIODE	1S1585
C720	1-127-881-21	CERAMIC	0.027uF	10%	50V		D670	8-719-815-85	DIODE	1S1585
C721	1-126-934-11	ELECT	220uF	20%	10V		D710	8-719-815-85	DIODE	1S1585
C722	1-126-964-11	ELECT	10uF	20%	50V		D720	8-719-815-85	DIODE	1S1585
C751	1-126-961-11	ELECT	2.2uF	20%	50V		D721	8-719-815-85	DIODE	1S1585
C752	1-162-282-31	CERAMIC	100PF	10%	50V		D722	8-719-815-85	DIODE	1S1585
C753	1-126-933-11	ELECT	100uF	20%	16V		D723	8-719-815-85	DIODE	1S1585
C754	1-162-201-31	CERAMIC	12PF	5%	50V		D724	8-719-200-82	DIODE	11ES2
C756	1-104-664-11	ELECT	47uF	20%	35V		D725	8-719-815-85	DIODE	1S1585
C757	1-128-576-11	ELECT	100uF	20%	63V		D770	8-719-815-85	DIODE	1S1585
C761	1-137-372-11	FILM	0.022uF	5%	50V		D792	8-719-815-85	DIODE	1S1585
C770	1-127-881-21	CERAMIC	0.027uF	10%	50V		D793	8-719-815-85	DIODE	1S1585
C791	1-126-960-11	ELECT	1uF	20%	50V		D801	8-719-922-17	DIODE	MTZJ-24B
C796	1-109-889-11	ELECT	1uF	20%	50V		D802	8-719-302-38	DIODE	RBV-602-01
C797	1-109-889-11	ELECT	1uF	20%	50V		D804	8-719-109-85	DIODE	RD5.1ES-B2
C801	1-104-664-11	ELECT	47uF	20%	25V		D810	8-719-200-82	DIODE	11ES2
C802	1-104-664-11	ELECT	47uF	20%	25V		D811	8-719-200-82	DIODE	11ES2
C805	1-137-397-11	FILM	0.047uF	5%	100V		D812	8-719-200-82	DIODE	11ES2
C806	1-137-397-11	FILM	0.047uF	5%	100V		D813	8-719-200-82	DIODE	11ES2
C807	1-104-664-11	ELECT	47uF	20%	25V		D814	8-719-815-85	DIODE	1S1585
C808	1-104-664-11	ELECT	47uF	20%	25V		D815	8-719-815-85	DIODE	1S1585
C809	1-126-960-11	ELECT	1uF	20%	50V		D817	8-719-921-74	DIODE	MTZN-10A
C810	1-126-960-11	ELECT	1uF	20%	50V		D818	8-719-815-85	DIODE	1S1585
C811	1-126-942-61	ELECT	1000uF	20%	25V		D820	8-719-200-82	DIODE	11ES2
C812	1-126-942-61	ELECT	1000uF	20%	25V		D821	8-719-200-82	DIODE	11ES2
C813	1-101-001-00	CERAMIC	0.001uF		50V		D822	8-719-200-82	DIODE	11ES2
C814	1-101-001-00	CERAMIC	0.001uF		50V		D823	8-719-200-82	DIODE	11ES2
C820	1-164-097-11	CERAMIC	0.022uF		50V			< EARTH TERMINAL >		
C821	1-164-097-11	CERAMIC	0.022uF		50V		* G201	1-537-738-21	TERMINAL, EARTH	
C822	1-104-664-11	ELECT	47uF	20%	16V		* G202	1-537-738-21	TERMINAL, EARTH	
C823	1-104-664-11	ELECT	47uF	20%	16V		* G203	1-537-738-21	TERMINAL, EARTH	
C950	1-126-767-11	ELECT	1000uF	20%	16V			< FRONT END >		
C951	1-164-097-11	CERAMIC	0.022uF		50V					
C952	1-126-960-11	ELECT	1uF	20%	50V		FE501	1-693-457-11	TUNER	
C953	1-124-464-11	ELECT	0.22uF	20%	50V			< IC >		
C954	1-126-964-11	ELECT	10uF	20%	50V		IC301	8-759-527-00	IC	LV1035M
C955	1-164-159-21	CERAMIC	0.1uF		50V		IC302	8-759-634-51	IC	M5218AP
		< FILTER >					IC401	8-759-805-14	IC	LC7822
CF501	1-760-127-11	FILTER, CERAMIC					IC501	8-759-495-82	IC	LA1838
CF502	1-760-127-11	FILTER, CERAMIC					IC502	8-759-584-70	IC	LC72131
CF503	1-760-127-11	FILTER, CERAMIC								
		< CONNECTOR >					IC701	8-749-921-04	IC	STK-4211MK-2
* CN701	1-564-778-11	PLUG, CONNECTOR (2.5MM) 4P					IC702	8-749-921-04	IC	STK-4211MK-2
CNS204	1-695-346-21	PIN, CONNECTOR (PC BOARD) 23P					IC801	8-759-231-58	IC	TA7812S
CNS701	1-695-330-31	PIN, CONNECTOR (PC BOARD) 7P					IC802	8-759-929-65	IC	LM7912CT
* CNS802	1-564-778-11	PLUG, CONNECTOR (2.5MM) 4P					IC950	8-759-333-83	IC	NJM2103D
		< CERAMIC VIBRATOR >						< JACK >		
CX301	1-579-952-21	VIBRATOR, CERAMIC (8MHz)					J253	1-770-377-21	JACK, PIN 1P	
							J402	1-770-615-21	JACK, PIN 6P	
							J403	1-774-005-21	JACK, PIN 6P	

# MAIN

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
< COIL >							R362	1-249-429-11	CARBON	10K	5%	1/4W	
							R363	1-249-411-11	CARBON	330	5%	1/4W	
L301	1-410-509-11	INDUCTOR	10uH				R402	1-249-421-11	CARBON	2.2K	5%	1/4W	F
L601	1-420-872-00	COIL, AIR-CORE											
L651	1-420-872-00	COIL, AIR-CORE					R403	1-249-417-11	CARBON	1K	5%	1/4W	F
L701	1-420-872-00	COIL, AIR-CORE					R404	1-249-417-11	CARBON	1K	5%	1/4W	F
L751	1-420-872-00	COIL, AIR-CORE					R405	1-249-417-11	CARBON	1K	5%	1/4W	F
< TRANSISTOR >							R406	1-249-417-11	CARBON	1K	5%	1/4W	F
							R407	1-249-417-11	CARBON	1K	5%	1/4W	F
Q303	8-729-141-30	TRANSISTOR	2SC3623A-LK				R408	1-249-429-11	CARBON	10K	5%	1/4W	
Q304	8-729-141-30	TRANSISTOR	2SC3623A-LK				R409	1-249-417-11	CARBON	1K	5%	1/4W	F
Q307	8-729-141-30	TRANSISTOR	2SC3623A-LK				R410	1-249-437-11	CARBON	47K	5%	1/4W	
Q308	8-729-141-30	TRANSISTOR	2SC3623A-LK				R414	1-249-425-11	CARBON	4.7K	5%	1/4W	F
Q501	8-729-922-66	TRANSISTOR	2SC2410SN				R415	1-249-417-11	CARBON	1K	5%	1/4W	F
Q503	8-729-027-38	TRANSISTOR	DTA144EKA-T146				R420	1-249-441-11	CARBON	100K	5%	1/4W	
Q504	8-729-027-38	TRANSISTOR	DTA144EKA-T146				R435	1-249-418-11	CARBON	1.2K	5%	1/4W	F
Q505	8-729-030-02	TRANSISTOR	DTC144ESA				R441	1-249-418-11	CARBON	1.2K	5%	1/4W	F
Q610	8-729-119-78	TRANSISTOR	2SC403SP-51				R442	1-249-418-11	CARBON	1.2K	5%	1/4W	F
Q620	8-729-140-82	TRANSISTOR	2SA988-PAFAEA				R452	1-249-421-11	CARBON	2.2K	5%	1/4W	F
Q670	8-729-140-82	TRANSISTOR	2SA988-PAFAEA				R453	1-249-417-11	CARBON	1K	5%	1/4W	F
Q710	8-729-119-78	TRANSISTOR	2SC403SP-51				R454	1-249-417-11	CARBON	1K	5%	1/4W	F
Q720	8-729-140-82	TRANSISTOR	2SA988-PAFAEA				R455	1-249-417-11	CARBON	1K	5%	1/4W	F
Q721	8-729-140-82	TRANSISTOR	2SA988-PAFAEA				R456	1-249-417-11	CARBON	1K	5%	1/4W	F
Q722	8-729-184-53	TRANSISTOR	2SC1845-EA				R457	1-249-417-11	CARBON	1K	5%	1/4W	F
Q723	8-729-119-78	TRANSISTOR	2SC403SP-51				R458	1-249-429-11	CARBON	10K	5%	1/4W	
Q770	8-729-140-82	TRANSISTOR	2SA988-PAFAEA				R459	1-249-417-11	CARBON	1K	5%	1/4W	F
Q791	8-729-119-78	TRANSISTOR	2SC27S5TP-HFE				R460	1-249-437-11	CARBON	47K	5%	1/4W	
Q793	8-729-141-30	TRANSISTOR	2SC3623A-LK				R465	1-249-417-11	CARBON	1K	5%	1/4W	F
Q794	8-729-141-30	TRANSISTOR	2SC3623A-LK				R470	1-249-441-11	CARBON	100K	5%	1/4W	
Q801	8-729-140-97	TRANSISTOR	2SB734-34				R501	1-249-422-11	CARBON	2.7K	5%	1/4W	F
Q802	8-729-119-78	TRANSISTOR	2SC403SP-51				R502	1-249-415-11	CARBON	680	5%	1/4W	F
Q808	8-729-180-92	TRANSISTOR	2SD809-K				R503	1-247-791-91	CARBON	22	5%	1/4W	
Q809	8-729-119-78	TRANSISTOR	2SC403SP-51				R504	1-249-393-11	CARBON	10	5%	1/4W	F
Q951	8-729-209-15	TRANSISTOR	2SD2012				R505	1-249-411-11	CARBON	330	5%	1/4W	
< RESISTOR >							R506	1-247-891-00	CARBON	330K	5%	1/4W	
							R507	1-249-417-11	CARBON	1K	5%	1/4W	F
R298	1-249-387-11	CARBON	3.3	5%	1/4W	F	R508	1-249-411-11	CARBON	330	5%	1/4W	
R299	1-249-387-11	CARBON	3.3	5%	1/4W	F	R511	1-249-441-11	CARBON	100K	5%	1/4W	
R300	1-247-903-00	CARBON	1M	5%	1/4W		R512	1-249-441-11	CARBON	100K	5%	1/4W	
R301	1-249-421-11	CARBON	2.2K	5%	1/4W	F							
R302	1-249-421-11	CARBON	2.2K	5%	1/4W	F	R513	1-249-425-11	CARBON	4.7K	5%	1/4W	
							R514	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R303	1-249-439-11	CARBON	68K	5%	1/4W		R515	1-249-410-11	CARBON	270	5%	1/4W	F
R304	1-249-441-11	CARBON	100K	5%	1/4W		R516	1-249-402-11	CARBON	56	5%	1/4W	F
R305	1-249-429-11	CARBON	10K	5%	1/4W		R517	1-247-842-11	CARBON	3K	5%	1/4W	
R306	1-249-436-11	CARBON	39K	5%	1/4W								
R307	1-247-862-11	CARBON	20K	5%	1/4W		△R519	1-249-403-11	CARBON	68	5%	1/4W	F
							R521	1-249-426-11	CARBON	5.6K	5%	1/4W	
R308	1-249-421-11	CARBON	2.2K	5%	1/4W	F	R531	1-249-425-11	CARBON	4.7K	5%	1/4W	
R309	1-249-421-11	CARBON	2.2K	5%	1/4W	F	R532	1-249-425-11	CARBON	4.7K	5%	1/4W	
R352	1-249-441-11	CARBON	100K	5%	1/4W		R535	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R353	1-249-425-11	CARBON	4.7K	5%	1/4W	F							
R354	1-249-425-11	CARBON	4.7K	5%	1/4W	F	R536	1-249-417-11	CARBON	1K	5%	1/4W	F
							R537	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R355	1-249-425-11	CARBON	4.7K	5%	1/4W	F	R538	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R356	1-249-425-11	CARBON	4.7K	5%	1/4W	F	R539	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R357	1-249-441-11	CARBON	100K	5%	1/4W		△R541	1-249-403-11	CARBON	68	5%	1/4W	F
R358	1-249-441-11	CARBON	100K	5%	1/4W								
R359	1-249-425-11	CARBON	4.7K	5%	1/4W	F	R542	1-249-420-11	CARBON	10K	5%	1/4W	F
							R543	1-249-429-11	CARBON	10K	5%	1/4W	
R360	1-247-843-11	CARBON	3.3K	5%	1/4W		R544	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R361	1-249-429-11	CARBON	10K	5%	1/4W		R545	1-249-425-11	CARBON	4.7K	5%	1/4W	F

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R546	1-247-807-31	CARBON	100	5%	1/4W	R720	1-249-420-11	CARBON	1.8K	5%	1/4W F
R547	1-249-425-11	CARBON	4.7K	5%	1/4W F	R721	1-247-815-91	CARBON	220	5%	1/4W
R548	1-249-421-11	CARBON	2.2K	5%	1/4W F	△ R722	1-249-403-11	CARBON	68	5%	1/4W F
R549	1-249-429-11	CARBON	10K	5%	1/4W	R723	1-249-437-11	CARBON	47K	5%	1/4W
R550	1-249-417-11	CARBON	1K	5%	1/4W F	R724	1-249-425-11	CARBON	4.7K	5%	1/4W F
R553	1-249-417-11	CARBON	1K	5%	1/4W F	R725	1-249-427-11	CARBON	6.8K	5%	1/4W F
R554	1-249-429-11	CARBON	10K	5%	1/4W	R727	1-247-752-11	CARBON	1K	5%	1/2W F
R555	1-247-843-11	CARBON	3.3K	5%	1/4W	R730	1-249-426-11	CARBON	5.6K	5%	1/4W
R556	1-249-417-11	CARBON	1K	5%	1/4W F	R731	1-249-426-11	CARBON	5.6K	5%	1/4W
R557	1-249-417-11	CARBON	1K	5%	1/4W F	R732	1-247-753-11	CARBON	1.2K	5%	1/2W F
R558	1-249-417-11	CARBON	1K	5%	1/4W F	R733	1-247-753-11	CARBON	1.2K	5%	1/2W F
R559	1-247-863-91	CARBON	22K	5%	1/4W	R734	1-249-429-11	CARBON	10K	5%	1/4W
R561	1-247-843-11	CARBON	3.3K	5%	1/4W	R751	1-249-421-11	CARBON	2.2K	5%	1/4W F
R601	1-249-421-11	CARBON	2.2K	5%	1/4W F	R752	1-249-438-11	CARBON	56K	5%	1/4W
R602	1-249-438-11	CARBON	56K	5%	1/4W	R753	1-249-412-11	CARBON	390	5%	1/4W F
R603	1-249-412-11	CARBON	390	5%	1/4W F	R754	1-249-438-11	CARBON	56K	5%	1/4W
R604	1-249-438-11	CARBON	56K	5%	1/4W	R755	1-247-760-11	CARBON	4.7K	5%	1/2W F
R605	1-247-760-11	CARBON	4.7K	5%	1/2W F	R756	1-249-425-11	CARBON	4.7K	5%	1/4W F
R606	1-249-425-11	CARBON	4.7K	5%	1/4W F	△ R757	1-249-405-11	CARBON	100	5%	1/4W F
△ R610	1-220-755-11	METAL	0.22	10%	2W	△ R760	1-220-755-11	METAL	0.22	10%	2W
△ R617	1-249-393-11	CARBON	10	5%	1/4W F	△ R767	1-249-393-11	CARBON	10	5%	1/4W F
R618	1-249-389-11	CARBON	4.7	5%	1/4W F	R768	1-249-389-11	CARBON	4.7	5%	1/4W F
△ R619	1-249-405-11	CARBON	100	5%	1/4W F	R770	1-249-420-11	CARBON	1.8K	5%	1/4W F
R620	1-249-420-11	CARBON	1.8K	5%	1/4W F	R771	1-247-815-91	CARBON	220	5%	1/4W
R621	1-247-815-91	CARBON	220	5%	1/4W	R772	1-249-431-11	CARBON	15K	5%	1/4W
△ R622	1-249-403-11	CARBON	68	5%	1/4W F	R773	1-249-437-11	CARBON	47K	5%	1/4W
R623	1-249-437-11	CARBON	47K	5%	1/4W	R774	1-249-431-11	CARBON	15K	5%	1/4W
R630	1-249-426-11	CARBON	5.6K	5%	1/4W	R781	1-247-887-00	CARBON	220K	5%	1/4W
R631	1-247-887-00	CARBON	220K	5%	1/4W	R782	1-247-753-11	CARBON	1.2K	5%	1/2W F
R632	1-249-426-11	CARBON	5.6K	5%	1/4W	R783	1-247-753-11	CARBON	1.2K	5%	1/2W F
R651	1-249-421-11	CARBON	2.2K	5%	1/4W F	R791	1-249-441-11	CARBON	100K	5%	1/4W
R652	1-249-438-11	CARBON	56K	5%	1/4W	R792	1-249-441-00	CARBON	100K	5%	1/4W
R653	1-249-412-11	CARBON	390	5%	1/4W F	△ R803	1-247-739-11	CARBON	100	5%	1/2W F
R654	1-249-438-11	CARBON	56K	5%	1/4W	R804	1-249-425-11	CARBON	4.7K	5%	1/4W F
R656	1-249-425-11	CARBON	4.7K	5%	1/4W F	△ R810	1-249-381-11	CARBON	1	5%	1/4W F
△ R660	1-220-755-11	METAL	0.22	10%	2W	△ R811	1-249-381-11	CARBON	1	5%	1/4W F
R665	1-247-760-11	CARBON	4.7K	5%	1/2W F	R821	1-249-437-11	CARBON	47K	5%	1/4W
△ R667	1-249-393-11	CARBON	10	5%	1/4W F	R822	1-249-425-11	CARBON	4.7K	5%	1/4W F
R668	1-249-389-11	CARBON	4.7	5%	1/4W F	R823	1-249-437-11	CARBON	47K	5%	1/4W
R670	1-249-420-11	CARBON	1.8K	5%	1/4W F	R824	1-249-425-11	CARBON	4.7K	5%	1/4W F
△ R671	1-247-815-91	CARBON	220	5%	1/4W	R825	1-249-407-11	CARBON	150	5%	1/4W F
R672	1-249-431-11	CARBON	15K	5%	1/4W	△ R830	1-249-405-11	CARBON	100	5%	1/4W F
R673	1-249-437-11	CARBON	47K	5%	1/4W	△ R831	1-249-403-11	CARBON	68	5%	1/4W F
R674	1-249-431-11	CARBON	15K	5%	1/4W	R950	1-249-421-11	CARBON	2.2K	5%	1/4W F
R701	1-249-421-11	CARBON	2.2K	5%	1/4W F	R951	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-249-438-11	CARBON	56K	5%	1/4W	R952	1-247-843-11	CARBON	3.3K	5%	1/4W
R703	1-249-412-11	CARBON	390	5%	1/4W F	R953	1-247-863-91	CARBON	22K	5%	1/4W
R704	1-249-438-11	CARBON	56K	5%	1/4W	R954	1-249-439-11	CARBON	68K	5%	1/4W
R705	1-247-760-11	CARBON	4.7K	5%	1/2W F	R955	1-249-429-11	CARBON	10K	5%	1/4W
R706	1-249-425-11	CARBON	4.7K	5%	1/4W F	R956	1-247-843-11	CARBON	3.3K	5%	1/4W
△ R707	1-249-405-11	CARBON	100	5%	1/4W F	R957	1-249-417-11	CARBON	1K	5%	1/4W F
△ R710	1-220-755-11	METAL	0.22	10%	2W	R958	1-249-401-11	CARBON	47	5%	1/4W F
R711	1-249-405-11	CARBON	100	5%	1/4W F	R960	1-249-429-11	CARBON	10K	5%	1/4W
△ R717	1-249-393-11	CARBON	10	5%	1/4W F	< RELAY >					
R718	1-249-389-11	CARBON	4.7	5%	1/4W F	RY601	1-515-921-11	RELAY (12V)			
△ R719	1-249-405-11	CARBON	100	5%	1/4W F	RY701	1-515-921-11	RELAY (12V)			

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.



MAIN	PRIMARY	SECONDARY	STANDBY	VOL-TONE
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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
RY801	1-755-013-11	RELAY				< RESISTOR >	
		< SFR >		R901	1-202-725-00	SOLID 3.3M 10% 1/2W	
SFR501	1-238-599-11	RES, ADJ, CARBON 4.7K				< RELAY >	
		< TRANSFORMER >		RY901	1-755-018-11	RELAY	
T502	1-234-304-11	ENCAPSULATED COMPONENT				< TRANSFORMER >	
T503	1-233-885-11	ENCAPSULATED COMPONENT		△ T901	1-431-258-31	TRANSFORMER, POWER	
T504	1-234-305-11	ENCAPSULATED COMPONENT (LPF)		*****			
T505	1-234-305-11	ENCAPSULATED COMPONENT (LPF)			A-4419-635-A	VOL-TONE BOARD, COMPLETE	
		< TERMINAL >				*****	
TM1	1-537-240-51	TERMINAL BOARD (CHECKER PIN)				< CAPACITOR >	
TM601	1-537-923-11	TERMINAL BOARD (SPEAKER) (6P)		C420	1-162-207-31	CERAMIC 22PF 5% 50V	
TM701	1-537-240-11	TERMINAL BOARD (CHECKER PIN)		C426	1-126-795-11	ELECT 10uF 20% 25V	
		< VIBRATOR >		C427	1-124-252-00	ELECT 0.33uF 20% 50V	
X501	1-781-385-11	VIBRATOR, CRYSTAL (7.2MHz)		C428	1-130-489-00	MYLAR 0.033uF 5% 50V	
*****				C429	1-102-973-00	CERAMIC 100PF 5% 50V	
	1-673-708-11	PRIMARY BOARD		C430	1-104-942-11	ELECT 1uF 20% 50V	
		*****		C431	1-104-942-11	ELECT 1uF 20% 50V	
		< CONNECTOR >		C432	1-126-795-11	ELECT 10uF 20% 25V	
CNP903	1-564-321-00	PIN, CONNECTOR 2P		C433	1-126-795-11	ELECT 10uF 20% 25V	
		< FUSE >		C470	1-162-207-31	CERAMIC 22PF 5% 50V	
△ F901	1-576-109-11	FUSE (5A/125V)		C475	1-126-795-11	ELECT 10uF 20% 25V	
		< TRANSFORMER >		C476	1-126-795-11	ELECT 10uF 20% 25V	
△ T901	1-433-879-11	TRANSFORMER, POWER		C477	1-124-252-00	ELECT 0.33uF 20% 50V	
*****				C478	1-130-489-00	MYLAR 0.033uF 5% 50V	
	1-673-707-11	SECONDARY BOARD		C479	1-102-973-00	CERAMIC 100PF 5% 50V	
		*****		C492	1-124-464-11	ELECT 0.22uF 20% 50V	
		< CONNECTOR >				< CONNECTOR >	
CNS801	1-764-480-11	PIN, CONNECTOR (PC BOARD) 11P		CNS402	1-695-330-31	PIN, CONNECTOR (PC BOARD) 7P	
		< DIODE >		CNS403	1-568-828-11	PIN, CONNECTOR (PC BOARD) 9P	
*****						< DIODE >	
	1-673-705-11	STANDBY BOARD		D421	8-719-815-85	DIODE 1S1585	
		*****				< IC >	
		< CONNECTOR >		IC404	8-759-634-51	IC M5218AP	
CNJ902	1-540-057-11	OUTLET, AC (POLAR)				< TRANSISTOR >	
CNS301	1-568-828-11	PIN, CONNECTOR (PC BOARD) 9P BOARD		Q401	8-729-202-67	TRANSISTOR 2SK246-GR3	
		< DIODE >		Q402	8-729-141-30	TRANSISTOR 2SC3623A-LK	
D816	8-719-815-85	DIODE 1S1585		Q451	8-729-202-67	TRANSISTOR 2SK246-GR3	
		< EARTH TERMINAL >		Q452	8-729-141-30	TRANSISTOR 2SC3623A-LK	
* G900	1-537-738-21	TERMINAL, EARTH				< RESISTOR >	
				R425	1-249-429-11	CARBON 10K 5% 1/4W	
				R426	1-249-439-11	CARBON 68K 5% 1/4W	
				R427	1-249-417-11	CARBON 1K 5% 1/4W	F
				R430	1-249-437-11	CARBON 47K 5% 1/4W	
				R431	1-247-843-11	CARBON 3.3K 5% 1/4W	
				R432	1-247-883-00	CARBON 150K 5% 1/4W	

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.



Ref. No.	Part No.	Description			Remark
R433	1-249-427-11	CARBON	6.8K	5%	1/4W F
R434	1-249-413-11	CARBON	470	5%	1/4W F
R438	1-249-441-11	CARBON	100K	5%	1/4W
R441	1-249-441-11	CARBON	100K	5%	1/4W
R464	1-247-903-00	CARBON	1M	5%	1/4W
R469	1-247-903-00	CARBON	1M	5%	1/4W
R475	1-249-429-11	CARBON	10K	5%	1/4W
R476	1-249-439-11	CARBON	68K	5%	1/4W
R477	1-249-417-11	CARBON	1K	5%	1/4W F
R480	1-249-437-11	CARBON	47K	5%	1/4W
R481	1-247-843-11	CARBON	3.3K	5%	1/4W
R482	1-247-883-00	CARBON	150K	5%	1/4W
R483	1-249-427-11	CARBON	6.8K	5%	1/4W F
R484	1-249-413-11	CARBON	470	5%	1/4W F
R491	1-249-441-11	CARBON	100K	5%	1/4W
R492	1-247-903-00	CARBON	1M	5%	1/4W

< VARIABLE RESISTOR >

RV404 1-225-229-11 RES, VAR, CARBON 100KX4 (MASTER VOLUME)

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#### MISCELLANEOUS

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9	1-782-100-11	WIRE (FLAT TYPE) (23 CORE)
13	1-782-074-11	WIRE (FLAT TYPE) (7 CORE)
14	1-782-075-11	WIRE (FLAT TYPE) (9 CORE)
△ 56	1-783-531-21	CORD, POWER
FL201	1-517-141-11	INDICATOR TUBE, FLUORESCENT
△ T901	1-431-258-31	TRANSFORMER, POWER

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#### ACCESSORIES & PACKING MATERIALS

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1-475-710-11	COMMANDER, STANDARD (RM-U302)
1-501-374-11	ANTENNA, LOOP
1-501-659-41	ANTENNA (FM)
3-866-100-01	MANUAL, INSTRUCTION (ENGLISH)
4-981-643-01	COVER, BATTERY (for RM-U302)

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#### HARDWARE LIST

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#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#2	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#3	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3
#3	7-685-650-91	SCREW +BVTP 3X16 TYPE2 TT(B)
#4	7-685-872-09	SCREW +BVTT 3X8 (S)

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

